DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 11/20/2010. Claims 16, 19-22, 24, 25, 36-39, 41-43, and, 49-65 are currently pending in the application. An action follows below:

Response to Arguments

2. Applicant's arguments filed 11/12/10 have been fully considered but they are not persuasive.

The Applicant's remarks on page 9 recited differences that existed between the provided prior art and the claimed invention. The Examiner respectfully disagrees with one of the differences presented. The Applicant states that the claimed invention provides that encoding and decoding control data separately from the image data. The Examiner disagrees with this argument. The claimed invention does not require that the control data and the image data are encoded and decoded separately. One example is claim 16 which recites, "an input signal including both display control data and image data" and "a control configured to process the display control data included in the input signal...and to process the image data to control optical characteristics of the displayed image based on the display control data." Claim 16 has no requirement that the display control data and the image data be separately encoded within the input signal. Therefore, any system that transmits a signal having display control data and image data either in a combined signal or as two separate signals reads on the requirements of the claimed invention. Thus, the system of Sakashita receives an input signal that

contains both image data and display control data and processes the input signal so that the display control data within the signal is used to control the backlight system of the display and the image data is used to control the optical characteristics of the display device. Similarly, all of the independent claims within the application only require generating a signal that contains image data and display control data, but none of the claims have a requirement that the two types of data are encoded or decoded separately within the signal. Thus, the claims all read on systems where the two types of data are provided in a combined signal. The Examiner notes that claim 19 even discloses "to include the control data together with the input image data in a combined output signal". Such a combined signal would suggest that the two types of data do not need to be separate within the signal.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 16, 36, 56-58, 61, 62, and, 65 are rejected under 35 U.S.C. 102(e) as being anticipated by Sakashita (USPN: 7027016).

Regarding claim 16, Sakashita discloses a display system for a passive display (Fig. 8, element 106), the system is configured to receive an input signal (Fig. 8, element 101), and the signal is sent to a control unit to process the signal (Fig. 8, elements 107 and 111). The input signal contains control data that is used to control the brightness of the illumination source of the display device (Fig. 8, elements 108 and 109) and image data (Fig. 8, the image data signals transmitted to the LCD). The image data is also adjusted based on the control data output from the processing unit (Fig. 8, the control signals transmitted to elements 102 and 104 are used to adjust the brightness and gamma control of the image signal; col. 11, lines 17-22). The gamma control signals and brightness adjustment signals are display control data that are used to control optical characteristics of the image data.

Regarding claim 36, Sakashita discloses an image processing system to prepare a signal that includes image data and control data by receiving an input signal (Fig. 8, element 101) and providing control data to control the illumination source of a display (Fig. 8, the signals transmitted to elements 108 and 109) and for controlling the image to be displayed on the display device (Fig. 8, the control signals transmitted to elements 102 and 104 are used to adjust the brightness and gamma control of the image signal; col. 11, lines 17-22). It is inherent that some sort of image obtaining device is used to produce the signal that is input into the image processor of Sakashita. Without an image obtaining device there would be no image signals to input into the processing system.

Regarding claim 56, Sakashita discloses generating gamma control data to control the images on the display device (col. 11, lines 17-22).

Regarding claims 57 and 65, Sakashita discloses a display system including a passive display (Fig. 8, element 106) and an illumination source to illuminate the display device (Fig. 10, element 2). Sakashita also discloses a circuitry (Fig. 8, elements 107 and 111) to receive an input signal (Fig. 8, element 101) containing control data and image data and to process the control data to control the illumination source based on the control data (Fig. 8, elements 108 and 109 control the light source based on control data from the signals).

Regarding claim 58, the input data of Sakashita contains data for controlling the light source (Fig. 8, the data transmitted to elements 108 and 109 is used to control the output of the lamp).

Regarding claims 61 and 62, Sakashita discloses using control data from the image signal to control the image data based by modifying the gamma of the display device (Fig. 8, element 104; col. 11, lines 17-22).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 19-22, 24, 25, 51, 52, 63, and, 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakashita.

Regarding claim 19, Sakashita discloses an image processor including a image delay unit (Fig. 8, element 110) and an analyzer to analyze image data (Fig. 8, elements 111 and 107) to create illumination control data (Fig. 8, the data transmitted to elements 108 and 109) and image control data (Fig. 8, the data transmitted to elements 102 and 104 from element 111). And to output the data as a combined signal to a passive display device with an illuminating source (Fig. 8, the data is transmitted to the LCD and to the irradiation modulating device to display a desired image).

Sakashita does not expressly name a buffer memory to receive the image data. At the time of invention it would have been obvious to make the signal delay unit of Sakashita a buffer memory. It is well known in the art that buffer memories can be used to temporarily store and delay transmission of a data signal. At the time of invention it

would have been a matter of design choice for one of ordinary skill in the art to use a buffer memory or other suitable delay unit to hold and later transmit the image data received by the image processor of Sakashita.

Regarding claim 20, Sakashita discloses transmitting the image data across transfer wires as video signals (Figs. 14a and 14b, the connections from the image input devices to the processing circuits and the display device, element 1400, are video signals used as transfer media of the image data.

Regarding claim 21, Sakashita does not expressly disclose using storage media such as a DVD, CD, tape or other storage device for transferring the image data. At the time of invention it would have been a matter of design choice to store the image signals in a DVD or other well known storage device before finally transmitting the information to the display device. The use of DVDs and other storage devices to transfer image data to a display device is well known.

Regarding claim 22, Sakashita does not expressly disclose using a multiplexer for time multiplexing the image data and control data. At the time of invention it would have been a matter of choice to time multiplex the image data and control data for transmission to the display system. The use of time multiplexing data for multiple signals across a single transmission line is well known in the art of data transmission. Depending on the available bandwidth and connection lines from the processor to the display system, it would have been a matter of design choice to use time multiplexing or some other form of data transmission.

Regarding claim 24, Sakashita discloses a passive display (Fig. 8, element 106) and a source of illumination (Fig. 10, element 2) and providing an input signal containing display control data for controlling characteristics of the light source and characteristics of the displayed images (Fig. 8, the outputs that are transmitted to the display device and the illumination modulating device). Sakashita discloses using control data to control the illumination from the lamp element (Fig. 8, elements 108 and 109) and using the control data to adjust the image data (Fig. 8, the output of element 111 are used to adjust image data in elements 102 and 104).

However, Sakashita directly transmits the image signals and the data signals to the display device without storage onto a storage medium. At the time of invention it would have been a matter of design choice for one of ordinary skill in the art to store the signals onto a storage medium such as a hard drive or other computer memory or to a storage device such as a DVD or CD rather than directly transmitting the information. The rationale would have been store preprocessed data for later transmission to the display device using known methods of data storage. Thus, it would have been obvious to store the control data and image data onto a storage medium after processing, but before output on the display device.

Regarding claim 25, Sakashita discloses evaluating multiple images for controlling the display device (Fig. 2, shows a sequence of multiple images that are all evaluated to generate control information for operating the display device).

Regarding claim 51, Sakashita discloses generating gamma control data to control the images on the display device (col. 11, lines 17-22).

Regarding claim 52, Sakashita discloses generating gamma control data to control the images on the display device (col. 11, lines 17-22).

Regarding claims 63 and 64, Sakashita discloses using the image data to control the colors of the display device and to control different colors for illumination control (col. 6, lines 39-41; col. 12, line 55 - col. 15, line 31). Sakashita does not expressly disclose maximizing the color fidelity of the displayed image, but calculates control of the illumination and image data based on the control data to produce desired colors. At of invention it would have been a matter of design choice to calculate the color information to maximize the color fidelity of the displayed image or to adjust the image to produce a desired color palette based on viewing preferences or other reasons. Therefore, it would have been obvious to choose calculations to maximize the color fidelity of the output image based on the illumination and control data of Sakashita.

5. Claims 37-39, 49, 50, 53, 54, 55, 59, and, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakashita in view of Fergason (USPN: 5717422).

Regarding claim 37, Sakashita discloses a display system and method of encoding image data that includes adjusting the illumination level of a backlight using control data from an input signal (Fig. 8, elements 107, 108, and 109 receive input signals to control the illumination of the display device). Sakashita immediately transmits the data rather than storing it before transmitting it to a display device.

At the time of invention it would have been a matter of design choice for one of ordinary skill in the art to store the signals onto a storage medium such as a hard drive

or other computer memory or to a storage device such as a DVD or CD rather than directly transmitting the information. The rationale would have been store preprocessed data for later transmission to the display device using known methods of data storage. Thus, it would have been obvious to store the control data and image data onto a storage medium after processing, but before output on the display device.

Also, Sakashita fails to expressly disclose maximizing the shades of gray available in the image. However, Sakashita does adjust the backlight system while maintaining the same number of available shades of gray for image signals which would increase the available number of gray scale levels for the display system.

Fergason discloses a system of increasing the number of gray levels available for a passive display system by adjusting the number (see the current application's specification; page 4; also see Fergason; col. 12, lines 54-58).

At the time of invention it would have been obvious to combine the teachings of Sakashita and Fergason. The passive display system having a controllable backlight of Sakashita could have been modified to use the methods of Fergason to increase the range of gray levels available. The motivation would have been to produce a display device with improved contrast (Fergason; col. 1, lines 44-45). The final number of gray scales available would be a matter of the level of control for the backlight of the display and the number of control levels used by the display system. Therefore, the combination of Sakashita and Fergason disclose a system of creating and storing control information for controlling a light source to control the number of shades of gray in the image data of the image to be output by the display device.

Regarding claim 38, The Examiner takes Official Notice that it is well known in the art of digital image editing to active change a viewed image as it is being edited. Standard computer programs such as MS Paint, Corel Draw, Adobe Photoshop are well known to change a displayed image while the image is being viewed. It would have been obvious to one of ordinary skill in the art to show changes to the images being displayed by Sakashita and Fergason while editing an image displayed on the display device.

Regarding claim 39, the Examiner notes that manual adjustment when editing images is well known in the art of image editing.

Regarding claims 49, 50, 53, 54, 55, 59, and 60, as discussed above, Fergason discloses adjusting display data to increase the number of shades of gray in the displayed image.

At the time of invention it would have been obvious to combine the teachings of Sakashita and Fergason to produce a device that would control the number of gray levels of the display based on control data. It would have been a matter of design choice to maximize the number of gray levels of the display. The number of gray levels of Fergason is based on the amount of levels the backlight can be controlled to achieve. By controlling the backlight to output all possible levels available based on different control data, the number of shades of gray would be maximized.

6. Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakashita in view of Fergason as applied to claim 37 above, and further in view of Ohyama et al. (USPN: 7002623), hereinafter Ohyama.

Regarding claim 41, as discussed above, Sakashita and Fergason disclose a method of encoding image data to control the number of shades of gray of a display and storing control data and image data for output to a passive display device.

However, neither Sakashita nor Fergason expressly discloses obtaining illumination data of a captured scene and adding display data to produce an image having the same illumination as the captured scene.

Ohyama discloses a method of obtaining images and obtaining the illumination information about an obtained image so that the image can be displayed with substantially the same illumination (col. 4, lines 32-61). Ohyama uses an input system to measure the illumination of a scene (Fig. 1, element 5) and the illumination information is then used to generate a digital image that is displayed on a display device (Fig. 1, element 3).

At the time of invention it would have been obvious to combine the teachings of Sakashita, Fergason and Ohyama to produce a method of editing images so that a displayed image is produced with an adjusted light source so that the illumination of a displayed image is the same as the input scene. The method displaying and encoding an image of Sakashita and Fergason could be combined with the image input system of Ohyama so that received images could include illumination information of the input scene so that displayed images would have the same illumination as the input image.

The rationale would be to produce observed images that would closely reproduce the originally input image for viewing by an observer (Ohyama; col. 2, lines 35-64). Thus, it would have been obvious to combine the teachings of Sakashita, Fergason, and Ohyama to produce a method of editing an image as described in claim 41.

Regarding claim 42, Ohyama discloses measuring the luminance information of the input scene using a spectroscope or photometer (col. 4, lines 40-45). The use of these types of devices would provide an average value of the illumination of the input scene or could be used to produce a spatial distribution of the light intensity in the input scene area.

Regarding claim 43, Ohyama discloses taking multiple images of an object and recording different illumination information for each image taken (col. 6, lines 28-37).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN HOLTON whose telephone number is (571)272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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